

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-697

Relating to Exemptions under
Section 27156 of the Vehicle Code

Dynamic Fuel Systems, Inc.
"HydraGen" hydrogen generator

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That installation of the HydraGen hydrogen generator device, manufactured by Dynamic Fuel Systems, Inc. (24 King Street, Huntsville, ON P1H 1X6), has been found not to reduce the effectiveness of the applicable vehicle pollution control systems, and therefore, the HydraGen hydrogen generator device is exempt from the prohibitions in Section 27156 of the Vehicle Code for all 1998-2002 model year (MY) 12.7 liters Detroit Diesel heavy-duty diesel engines.

The HydraGen hydrogen generator device consists of a 5-gallon fabric and vinyl water reservoir and a polyester/fiberglass case containing the electrolysis generator cell, two electrolyte/water reservoirs, various electrical components, electrical wiring and connectors, and reinforced polyvinylchloride supply hose for the hydrogen gas.

This Executive Order is based on emission test results using Heavy-Duty Federal Test Procedure (FTP) Transient Cycle test, Euro III European Stationary Cycle (ESC) test, and "Not-to-Exceed" (NTE) test submitted by Dynamic Fuel Systems, Inc. with the HydraGen hydrogen generator device.

If evidence provides the Air Resources Board with reasons to suspect that the HydraGen hydrogen generator device will affect the durability of the emission control system, Dynamic Fuel Systems, Inc. shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on or modified parts demonstrate adequate durability.

This Executive Order is valid provided that installation instructions for the HydraGen hydrogen generator device do not recommend tuning the vehicles to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the HydraGen hydrogen generator device, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's emission control system, shall invalidate this Executive Order.

Marketing of the HydraGen hydrogen generator device using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

Exemption of the HydraGen hydrogen generator device shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order shall not apply to any HydraGen hydrogen generator device advertised, offered for sale, sold with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

This Executive Order does not constitute any opinion as to the effect the use of the HydraGen hydrogen generator device may have on any warranty either expressed or implied by the vehicle manufacturer.

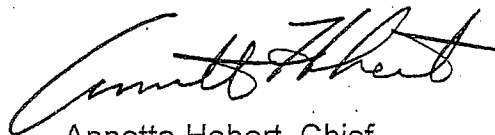
No claim of any kind, such as "Approved by the Air Resources Board," may be made with respect to the action taken herein in any advertising or other oral or written communication.

In addition to the foregoing, the Air Resources Board reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of California Code of Regulations, Title 13, Section 2222, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF DYNAMIC FUEL SYSTEMS, INC.'S HYDRAGEN HYDROGEN GENERATOR DEVICE.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order. The Executive Order may be revoked only after a ten day written notice of intention to revoke the Executive Order, in which period the holder of the Executive Order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request, and the Executive Order may not be revoked until a determination is made after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 23 day of May 2012.



Annette Hebert, Chief
Mobile Source Operations Division

EVALUATION SUMMARY

Manufacturer Name: Dynamic Fuel Systems, Inc.

Name of Device: HydraGen hydrogen generator device

Background:

Dynamic Fuel Systems, Inc. of 24 King Street, Huntsville, ON P1H 1X6 has applied for exemption from the prohibitions in Section 27156 of the California Vehicle Code for its HydraGen hydrogen generator device. The device is designed for all 1998-2002 model year (MY) 12.7 liters Detroit Diesel heavy-duty diesel engines.

Recommendation:

Grant exemption to Dynamic Fuel Systems, Inc. as requested and issue Executive Order D-697.

Device Description:

The HydraGen hydrogen generator device produces hydrogen through an electrolysis process by supplying water from a reservoir containing distilled water and an activator (potassium hydroxide) to an electrolysis dry cell containing stainless steel metal plates that are supplied electricity from the vehicle's battery. The device consists of a 5-gallon water reservoir (located in the truck cab), a polyester/fiberglass case containing two electrolyte/water reservoirs, an electrolysis dry cell (which contains the positive, negative, and neutral stainless steel metal plates), various electrical components, electrical wiring and connectors, and reinforced polyvinylchloride supply hose for the hydrogen gas.

Discussion/Basis for the Recommendation:

This exemption is based on the following emission tests conducted on a 2002 MY Detroit Diesel Series 60 12.7L heavy-duty diesel engine, engine family 2DDXH12.7EGL, with Dynamic Fuel Systems, Inc.'s HydraGen hydrogen generator device installed:

The emission test results are shown below:

Hot-Start FTP Transient Cycle Emission Test

	FTP Transient Cycle Emissions (grams/bhp-hr)			
	HC	CO	NOx	PM
FTP Emission Standards	1.3	15.5	4.0	0.10
FTP Results w/ HydraGen Device Installed	0.080	1.745	3.116	0.044

Euro III ESC 13-Mode Steady-State Emission Test

	Euro III ESC Emissions (grams/bhp-hr)			
	HC	CO	NOx	PM
Euro III Emission Standards	1.3	15.5	6.0	0.10
Euro III Results w/ HydraGen Device Installed	0.067	0.765	5.348	0.058

NTE Emission Test

	NTE Emissions (grams/bhp-hr)		
	NOx		
	Point 1	Point 2	Point 3
NTE Emission Standards	7.0	7.0	7.0
NTE Results w/ HydraGen Device Installed	5.65	3.51	5.70

- Notes: 1. NTE Point 1 is 50% Torque/90% RPM
 NTE Point 2 is 85% Torque/80% RPM
 NTE Point 3 is 65% Torque/70% RPM
 2. All testing was conducted at California Environmental Engineering in Santa Ana, California

All exhaust emission test results for FTP transient cycle, EURO III ESC, and NTE emission testing on the 2002 MY Detroit Diesel Series 60 12.7L heavy-duty diesel engine modified with the HydraGen hydrogen generator device showed that the modified engine met the exhaust emission standards. Similar results are expected when Dynamic Fuel Systems, Inc.'s HydraGen hydrogen generator device is used on the 1998-2002 MY Detroit Diesel Series 60 12.7L heavy-duty diesel engines stated in this application.